

A Novel Method for the Determination of Gross Transuranic Activity in Uranium Compounds.

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Multiple isotopic separations are usually required to quantify transuranic activity which may be present in Uranium compounds or samples. Americium, Plutonium, and Neptunium analyses are typically performed by resin column isolation methods followed by three separate depositions and nuclear measurements. This is often costly and time consuming for both the laboratory and the customer. A determination of gross transuranic activity, measuring the Np, Am, and Pu isotopes simultaneously, has been developed employing micro extraction of the sample with the commercially available extractant Alphaex[®] (a product of ETRAC Laboratories). The sample matrix is prepared, equilibrated with Pu-236 tracer and extracted to remove U and Th isotopes. The sample is co-precipitated with neodymium fluoride and submitted for alpha spectroscopy. Tracer recoveries typically vary between 60-90%. Samples can be prepared for counting within six hours and 24-hour result deadlines can be met with little difficulty. The cost of the laboratory materials to perform this analysis can be as low as \$5 per sample. Method troubleshooting and the option of the back extraction of the organic phase, to quantify Uranium and /or Thorium will also be discussed.

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